Cancer Mortality in Rhode Island Cities and Towns

In support of local cancer control task forces in Rhode Island, the Rhode Island Cancer Registry of the Rhode Island Department of Health (HEALTH) has constructed cancer mortality rates for 39 municipalities, using death reports made to HEALTH over the 14 years 1987-2000, and population data from the U.S. censuses of 1990 and 2000.

Background

In the period 1987-2000, Rhode Island's average annual, age-adjusted, gender-specific mortality rates for all malignant neoplasms (males: 284.3 per 100,000; females: 181.4 per 100,000) exceeded New England's rates (males: 273.2 per 100,000; females: 179.5 per 100,000), which in turn exceeded national rates (males: 268.0 per 100,000; females: 171.7 per 100,000). These differentials, observed for more than fifty years, have decreased over time, especially in the last 15 years of observation, and especially for women.

Methods

Counts of Rhode Island resident deaths from malignant neoplasms occurring between January 1, 1987, and December 31, 2000, categorized by age, gender, cause of death, and municipality were prepared from death reports made to HEALTH.

Counts of the Rhode Island population by age, gender, and municipality were obtained from publications of the 1990 and 2000 United States Censuses of Population. (Census) Analogous counts were estimated for the years 1991-1999 by linear interpolation, and for the years 1987-1989 by linear projection, using data from the two censuses.

Average annual, age-adjusted, gender-specific statewide and municipal cancer mortality rates were calculated from cancer death reports, actual and estimated counts of the Rhode Island population, and the year 2000 United States Standard Population. (CINA) The rates are expressed as "deaths per 100,000 population." Ninety-five percent confidence intervals were calculated for each municipal rate, and compared with the overall state rate, by gender. Statistically significant ($P < 0.05$) differences between state and municipal rates were noted.

Results

Table 14-6. Statewide and municipal cancer mortality rates

Average annual sex-specific statewide and municipal cancer mortality rates, RI, 1987-2000.*

	Males				Females			
Municipality	Colon	Lung	Prostate	All**	Colon	Lung	Breast	All**
State	33.5	89.7	35.2	284.3	21.6	40.8	33.6	181.4
Cumberland	29.8	72.7	36.3	236.7	21.0	30.5	32.5	157.8
East Greenwich	24.2	55.6	24.6	197.3	17.1	24.5	29.7	137.3
East Providence	29.7	72.9	27.2	233.6	17.6	33.6	27.9	152.3
Exeter	10.9	79.1	30.7	189.3	8.7	48.7	24.8	148.7
Foster	17.1	63.7	27.9	147.8	6.9	45.2	20.9	124.4
Glocester	23.1	59.6	29.1	181.1	8.4	25.8	31.6	145.0
Hopkinton	27.0	61.6	17.1	181.0	15.1	26.3	12.9	110.1
Jamestown	19.3	33.4	37.2	189.3	23.3	27.4	35.9	155.7
Johnston	23.1	72.3	27.5	215.4	12.5	32.6	25.8	139.0

Table 14-10. Statewide and municipal cancer mortality rates with standard errors and 95% confidence limits by sex

Please refer to Table 14-10, below, for data.

The statewide age-adjusted cancer mortality rate for all cancers combined is 284.3 per 100,000 among males and 181.4 per 100,000 among females. By municipality, rates among males vary from 197.3 per 100,000 for East Greenwich to 382.0 per 100,000 for New Shoreham, and rates among females vary from 136.6 per 100,000 for East Greenwich to 246.5 per 100,000 for New Shoreham.

Generally, Rhode Island's municipal-level cancer mortality rates have wide confidence limits, thus limiting their usefulness in identifying disparities at this level of geographical analysis. Among 78 possible gender-specific municipal-to-state comparisons, five are statistically significant at the $P < 0.05$, including:

1. lower-than-state rates for males residing in East Greenwich
2. lower-than-state rates for females residing in East Greenwich
3. lower-than-state rates for females residing in Bristol
4. higher-than-state rates for females residing in Warwick
5. higher-than-state rates for males residing in Woonsocket

Discussion

Cancer is a major cause of mortality in Rhode Island, as it is in the United States as a whole. Between two and three of every ten people in Rhode Island will die of the disease. Cancer death rates vary widely at the municipal level, but, with few exceptions, cannot be used to identify disparities among cities and towns because of statistical imprecision, as indicated by large standard errors and wide confidence limits. "Finer" analyses, of time trends or of rates for individual cancers, for example, would be even less productive of statistically significant differentials among municipal cancer mortality rates.

The five statistically significant differences found between two gender-specific state rates and 78 gender-specific municipal rates will be examined more closely, using data from various sources to try to explain higher or lower rates, recognizing that the differences may have been caused by random fluctuations in the distribution of cancer deaths throughout the state. (Note: 80 tests of statistical significance at the $P < 0.05$ probability level are expected to yield about four statistically significant results on the basis of chance, alone.)

In the meantime, we must work vigorously and consistently to apply basic cancer control strategies from Cancer Control Rhode Island: Strategic Plan for 1998-2005 (Plan) and from *Healthy People 2010* (HP):

- Prevent tobacco use; promote quitting among users.

- Screen eligibles for cancers of the cervix, breast, and colon-rectum.
- Identify people at high risk for cancers of the cervix, breast, ovary, prostate, colon-rectum, skin, and oral cavity; examine high-risk people regularly.
- Support American College of Surgeons approved hospital cancer programs.
- Assure state-of-the-art cancer care for all cancer patients; ascertain the eligibility of all cancer patients for clinical trials; promote enrollment in clinical trials.
- Promote the full use of hospice benefits for terminally ill cancer patients.

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Table 14-10. Statewide and municipal cancer mortality rates with standard errors and 95% confidence limits by sex

Average annual statewide and municipal cancer mortality rates with standard errors and 95% confidence limit by sex, RI, 1987-2000.*

	---------- Males ----------					---------- Females ----------				
Municipality	Mx Rt	Std Err	Low CL	Hi CL	Sig .05	Mx Rt	Std Err	Low CL	Hi CL	Sig .05
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
*[United States]**	*268.0*	*0.1*	*267.7*	*268.3*	*(NA)*	*171.7*	*0.1*	*171.5*	*171.9*	*(NA)*
*[New England]**	*273.2*	*0.6*	*272.0*	*274.4*	*(NA)*	*179.5*	*0.4*	*178.8*	*180.3*	*(NA)*
Rhode Island	*284.3*	*4.3*	*275.9*	*292.7*	*(NA)*	*181.4*	*2.8*	*175.9*	*186.9*	*(NA)*
Barrington	284.1	34.8	215.9	352.3		172.4	22.2	128.9	215.9	
Bristol	264.2	26.0	213.2	315.2		**138.2**	**16.3**	**106.3**	**170.1**	**Low**
Burrillville	285.4	36.5	213.9	356.9		153.7	22.6	109.4	198.0	
Central Falls	335.1	37.8	261.0	409.2		171.3	21.4	129.4	213.2	
Charlestown	239.6	46.4	148.7	330.5		192.0	36.9	119.7	264.3	
Coventry	290.3	26.6	238.2	342.4		180.3	16.4	148.2	212.4	
Cranston	278.1	14.3	250.1	306.1		177.5	9.4	159.1	195.9	
Cumberland	256.4	24.3	208.8	304.0		166.5	15.2	136.7	196.3	
East Greenwich	**197.3**	**33.5**	**131.6**	**263.0**	**Low**	**136.6**	**22.8**	**91.9**	**181.3**	**Low**
East Providence	291.4	17.9	256.3	326.5		188.8	11.8	165.7	211.9	
Exeter	289.6	67.6	157.1	422.1		199.0	48.3	104.3	293.7	
Foster	208.7	64.4	82.5	334.9		181.0	51.0	81.0	281.0	
Glocester	235.4	48.2	140.9	329.9		208.1	38.1	133.4	282.8	
Hopkinton	296.8	56.5	186.1	407.5		186.8	39.5	109.4	264.2	
Jamestown	270.7	62.4	148.4	393.0		224.2	44.9	136.2	312.2	
Johnston	288.9	24.3	241.3	336.5		176.9	15.9	145.7	208.1	
Lincoln	267.1	27.6	213.0	321.2		149.2	17.3	115.3	183.1	
Little Compton	288.5	68.1	155.0	422.0		161.8	44.9	73.8	249.8	
Middletown	278.8	33.2	213.7	343.9		195.3	22.9	150.4	240.2	
Narragansett	267.7	37.1	195.0	340.4		193.5	26.2	142.1	244.9	
New Shoreham	382.0	183.2	22.9	741.1		246.5	107.7	35.4	457.6	
Newport	290.1	28.0	235.2	345.0		195.0	18.5	158.7	231.3	
North Kingstown	308.7	31.6	246.8	370.6		183.8	19.3	146.0	221.6	
North Providence	293.2	22.2	249.7	336.7		182.8	14.4	154.6	211.0	
North Smithfield	244.2	34.9	175.8	312.6		174.9	25.1	125.7	224.1	
Pawtucket	297.7	16.3	265.8	329.6		183.2	10.4	162.8	203.6	
Portsmouth	253.3	35.0	184.7	321.9		163.5	21.9	120.6	206.4	
Providence	299.7	12.0	276.2	323.2		192.3	7.8	177.0	207.6	
Richmond	328.1	87.4	156.8	499.4		225.2	59.4	108.8	341.6	
Scituate	258.8	43.3	173.9	343.7		174.4	30.5	114.6	234.2	
Smithfield	256.9	29.1	199.9	313.9		189.5	21.0	148.3	230.7	
South Kingstown	255.7	28.2	200.4	311.0		153.9	18.1	118.4	189.4	
Tiverton	284.6	34.9	216.2	353.0		160.6	21.6	118.3	202.9	
Warren	253.1	34.6	185.3	320.9		188.8	25.5	138.8	238.8	
Warwick	301.3	14.5	272.9	329.7		**202.8**	**9.7**	**183.8**	**221.8**	**High**
West Greenwich	282.8	100.4	86.0	479.6		220.1	68.5	85.8	354.4	
West Warwick	306.3	28.0	251.4	361.2		190.3	17.4	156.2	224.4	
Westerly	249.2	25.5	199.2	299.2		180.9	18.4	144.8	217.0	
Woonsocket	**338.2**	**22.6**	**293.9**	**382.5**	**High**	178.7	13.5	152.2	205.2	

(1) Rates are age-adjusted to the year 2000 US standard population, expressed as deaths per 100,000 population.
(2) Standard error of proportion for the age-adjusted rate
(3) 1.96 S.E. lower confidence limit
(4) 1.96 S.E. higher confidence limit
(5) Indication of significant difference from the Rhode Island state rate, P < 0.05
(NA) Not Applicable

* Rates for US and New England from SEER US Mortality 1969-2000 Data, calculated with *SEER*Stat*[+]

Source: Office of Vital Records, HEALTH.